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VOL. 18 No. 14

April 5, 1968

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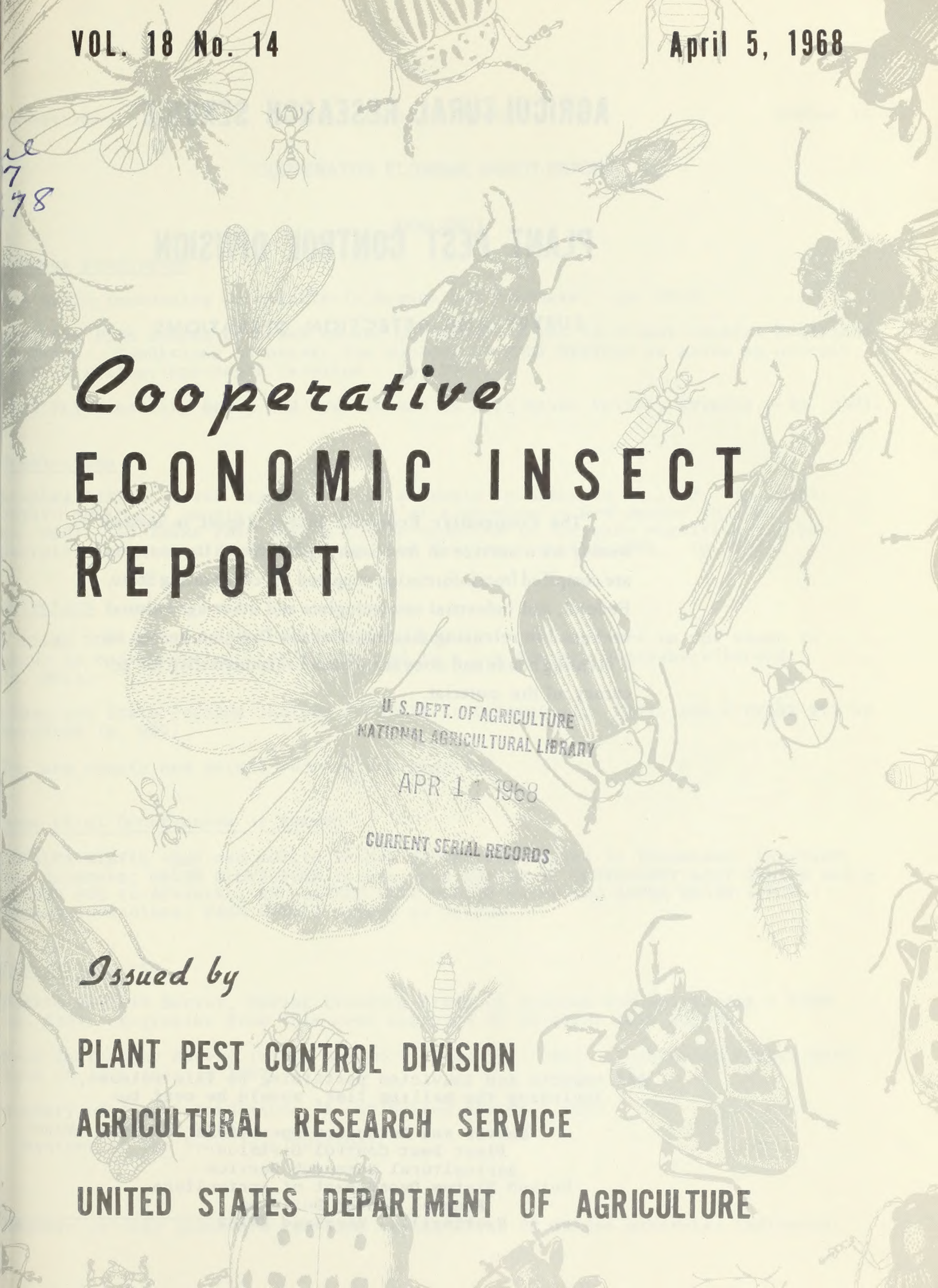

Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Hyattsville, Maryland 20782

Volume 18 April 5, 1968 Number 14

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

PEA APHID increasing on alfalfa in Nevada and Arkansas. (p. 255).

SOUTHERN PINE BEETLE outbreak severe on 400,000 acres in 4 east-central Louisiana parishes. Conditions favorable for buildup of BARK BEETLES in pines in Georgia, North Carolina, and South Carolina. (p. 258).

HORN FLY unusually heavy and troublesome in Salt River Valley, Arizona. (p. 259).

Predictions

ALFALFA WEEVIL larvae expected to be economic in Arkansas in 1968. (p. 255). POTATO APHID egg counts indicate more of a problem in New Jersey in 1968. (p. 256). SOUTHERN PINE BEETLE losses expected to increase significantly in Georgia, Louisiana, South Carolina, and Tennessee during 1968. (p. 258).

Detection

A STINK BUG reported for first time in Hawaii. This species is not known to occur in continental United States and is a new Western Hemisphere record. (p. 261).

Other new State records include a WEEVIL in Delaware (p. 257), and a CRANE FLY in Maryland (p. 262).

For new county and island records see page 262.

Some First Occurrences of Season

ALFALFA WEEVIL eggs and adults in New Jersey and larvae in Tennessee, Maryland, and Arkansas; GREEN CLOVERWORM larvae, and adults of CONVERGENT LADY BEETLE and a FLOWER BUG in Arkansas; RED-BANDED LEAF ROLLER males and APPLE GRAIN APHID nymphs in Indiana; PEAR PSYLLA nymphs in Oregon.

Special Reports

Potato Psyllid Survey, Spring Breeding Areas of Arizona and California - 1968 (p. 253). Migration from this area expected to be light this season.

Beet Leafhopper Survey in New Mexico - 1968. (p. 253). Population counts were less in 1968 than in 1967.

Summary of Insect Conditions in the United States - 1967
  Forest (pp. 263-266).
  Weather of the Year (pp. 267-270).

Reports in this issue are for week ending March 29 unless otherwise indicated.

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WEATHER BUREAU'S 30-DAY OUTLOOK

APRIL 1968

The Weather Bureau's 30-day outlook is for temperatures to average above seasonal normals over eastern and western quarters of the Nation. Below normal temperatures are expected in the central and southern Plains while near normal temperatures are anticipated in unspecified areas. Precipitation is expected to exceed normal in the west gulf coast region and also over the Ohio Valley and the Great Lakes region. Subnormal totals are indicated west of the Divide and in portions of the northern Plains. Elsewhere near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING APRIL 1

HIGHLIGHTS: A warming trend pushed temperatures far above normal over most of the Nation. A weekend cold front produced some violent weather in the Great Plains.

PRECIPITATION: Heavy rains fell along the Washington coast early in the week. The Oregon coast received moderate amounts with lighter amounts in California. The rains ended in the Far Northwest about Thursday. Widely scattered thundershowers occurred from the northern Great Plains to the Great Lakes region with totals ranging from light sprinkles to near 0.50 inch. Much of the area from central and southern California to western South Dakota and southward to the Rio Grande and the gulf coast received no rain during the week. Another rainless area extended from Florida and Georgia northward along the Atlantic coast to southern New Jersey. Thunderstorms developed over the central Great Plains on Saturday. Some were accompanied by hail and high winds. A few tornadoes were sighted. Hail as large as softballs fell near Sheffield, Texas, and 50 m.p.h.

Weather of the Week continued on page 260.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

Potato Psyllid Survey, Spring Breeding Areas of Arizona and California - 1968

The 1968 survey for potato psyllid (Paratrioza cockerelli) in the overwintering areas of Arizona and California was conducted March 21-25. Favorable rains during fall and winter months resulted in good development of wild Lycium spp. over most of the survey area. Immature psyllids were numerous in the Blythe and Barstow district where the heaviest adult populations occurred. Psyllid counts were comparatively low, averaging 120 per 100 sweeps in the Blythe and Bartow area and 214 per 100 sweeps in the Tucson and Phoenix area.

Comparison of average populations per 100 sweeps on overwintering hosts found during spring surveys from 1962 through 1968 are as follows:

State	District	1968	1967	1966	1965	1964	1963	1962
Arizona	Tuscon, Phoenix	214	34	73	508	158	715	2236
California	Blythe, Barstow	120	8	228	87	100	185	909

Results of the survey indicate a light migration potential this season. (PPC West. Reg.).

BEET LEAFHOPPER SURVEY IN NEW MEXICO - 1968

The beet leafhopper (Circulifer tenellus) survey was begun March 12 and completed March 14 in Eddy, Chaves, Lincoln, Otero, Dona Ana, and Sierra Counties. Total of 25 stops was made and host plants were present at 92 percent of the stops. Beet leafhoppers averaged 5 per 100 square feet throughout New Mexico.

Significant Observations: Population counts decreased from 86 per 100 square feet in 1967 to 5 in 1968. Host plants were abundant and in excellent condition throughout the survey route. This normally arid area has received unusual amounts of winter moisture, which tends to hold leafhopper populations down.

Current Conditions: The population decrease was uniform throughout the entire survey route, but was especially noticeable in the north El Paso Valley, the Las Cruces, and the Truth or Consequences areas. Town mustard, bladderpod, pepperweed, and flixweed were the principal host plants. (PPC and cooperating agencies).

ARMY CUTWORM (Chorizagrotis auxiliaris) - KANSAS - Ranged 0-2 per square foot in wheat in Washington, Clay, Dickinson, and Marion Counties. (Redding). Ranged 1-4 (up to 10-12) per square foot of wheat in Ottawa, Lincoln, Osborne, Rooks, Ellis, Russell, Ellsworth, and Saline Counties; present in all fields checked. Heaviest in Ottawa and Lincoln Counties. (Simpson). OKLAHOMA - Ranged 3-10 per square yard in wheat in Washita County and 8-15 per square yard in Jackson County; damage very light. (Okla. Coop. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Some barley treated at Yuma, Yuma County. (Ariz. Coop. Sur.).

GREENBUG (Schizaphis graminum) - NEW MEXICO - Heavy on wheat in Curry and Roosevelt Counties. (Nielsen, Campbell). OKLAHOMA - Counts per linear foot in 40 wheat fields surveyed in north-central area: Less than 5 in 24 fields, 5-25 in 12, and 25-60 in 4 fields. Winged adults ranged 5-20 percent of population. Populations ranged 100-500 per foot in scattered southwest area wheat. Heavy on Cimarron County dryland wheat. Predators active in north-central area; a braconid (Lysiphlebus testaceipes) parasitized 12 percent of aphids in Altus area. (Okla. Coop. Sur.). KANSAS - Remains light, 0-8 per row foot in wheat in Finney County; no feeding damage. (DePew). MISSISSIPPI - Reduced on wheat probably due to snowfall last period. Ranged 5-15 per square foot in fields sampled in Oktibbeha, Lowndes, Webster, and Attala Counties. (Dinkins).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEVADA - Heavy, much honeydew in alfalfa field in Pahrump Valley, Nye County; light in other fields of same area. (Johnson, Zoller). NEW MEXICO - Generally light on Dona Ana County alfalfa. (Campbell). ARKANSAS - Survey negative in southwest and central areas. (Boyer).

CORN EARWORM (Heliothis zea) - NEW MEXICO - Eggs and early larvae evident in lettuce fields; controls underway.

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - WISCONSIN - Overwintering larval survival high in cornstalks in western Dane County. (Wis. Ins. Sur.).

SMALL GRAINS

PALE WESTERN CUTWORM (Agrotis orthogonia) - KANSAS - Ranged 2-10 per square foot in many wheat fields in Finney County; feeding damage to wheat crowns evident. (DePew).

ENGLISH GRAIN APHID (Macrosiphum avenae) - OKLAHOMA - Light, less than 5 per linear foot, in many north-central area wheat fields. (Okla. Coop. Sur.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OKLAHOMA - Ranged 1-5 per linear foot in wheat in many north-central area fields. (Okla. Coop. Sur.).

BROWN WHEAT MITE (Petrobia latens) - KANSAS - Ranged 50-450 per linear row foot in Finney County, increasing with mild, dry weather in southwest district. Feeding and drought damaged young wheat plants. (DePew). Ranged 50-250 per row foot in most wheat fields in north-central and central districts; heaviest in Lincoln, Russell, and Ellis Counties. (Simpson). OKLAHOMA - Light in wheat in Kay County, medium to heavy in Cimarron County. (Okla. Coop. Sur.).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Ranged 10-100 per linear foot in 75 percent of wheat fields surveyed in north-central area; counts of 80-250 per linear foot causing concern in some areas of southwest. (Okla. Coop. Sur.).

TURF, PASTURES, RANGELAND

A BILLBUG (Sphenophorus chittendeni) - FLORIDA - Living larvae and adults, and many dead adults, probably this species, present on Bahia grass pasture at 55,000-acre ranch 10-15 miles southeast of Arcadia, De Soto County, March 22. (Strayer et al.). Two hundred acres of pasture dead; dying of grass first noticed in March 1967. Infestation now light and not spreading, but continuing checks will be made. Entire cause for grass dying undetermined. Severe drought and S. chittendeni believed to have caused problem. This species recorded only few times in State; limited to southern and coastal areas. (Fla. Coop. Sur.).

RHODES-GRASS SCALE (Antonina graminis) - CALIFORNIA - Heavy on Tifgreen Bermuda grass March 5 at Bakersfield, Kern County, for a new county record. Collected by J. H. Black. This is first record north of Tehachapi Mountains and represents a northward spread of 95 miles from nearest find at Los Angeles. (Cal. Coop. Rpt.).

AN ARMORED SCALE (Odonaspis ruthae) - CALIFORNIA - Heavy on Bermuda grass at Bakersfield, Kern County. (Cal. Coop. Rpt.).

A MEALYBUG (Chorizococcus rostellum) - ARIZONA - Nymphs increasing in Bermuda grass seed field at Yuma, Yuma County. (Ariz. Coop. Sur.).

FORAGE LEGUMES

PEA APHID (Acyrthosiphon pisum) - NEVADA - Heavy and general; increasing sharply on alfalfa in Pahrump Valley, Nye County; controls underway. (Johnson, Zoller). NEW MEXICO - Light on alfalfa in Dona Ana County. (Campbell). OKLAHOMA - Averaged 15 per sweep in 3-inch alfalfa in Cotton County and 20 per sweep in Kiowa County. Ranged 15-100 per square foot in alfalfa in north-central counties. (Okla. Coop. Sur.). ARKANSAS - Increased to 150-200 per 100 sweeps on alfalfa and vetch throughout State. (Boyer). VIRGINIA - Averaged 10 per 100 sweeps on alfalfa in Bedford County. (Allen). MARYLAND - Averaged less than one per sweep on alfalfa at Princess Anne, Somerset County. (U. Md., Ent. Dept.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Averaged 10 per 100 sweeps on Maricopa and Pinal County alfalfa. (Ariz. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - ARIZONA - Adults 80 and nymphs 40 per 100 sweeps on most alfalfa on west side of Salt River Valley, Maricopa County. (Ariz. Coop. Sur.). NEW MEXICO - Increasing to 25-50 per 25 sweeps in alfalfa in Dona Ana County. (N.M. Coop. Rpt.). WYOMING - Adults 1-5 per 100 sweeps in alfalfa in Platte, Goshen, and Laramie Counties. (Parshall).

WESTERN BROWN STINK BUG (Euschistus impictiventris) - ARIZONA - Averaged 10 per 100 sweeps in most alfalfa in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

ALFALFA WEEVIL (Hypera postica) - NEW JERSEY - Adults leaving hibernation and laying eggs in stubble due to recent warm weather. Total of 57 percent of eggs freshly laid in field near Cranbury, Middlesex County, March 21. (Ins.-Dis. Newsltr.). MARYLAND - First larvae of season, 3 per 25 stems, appeared at Cambridge, Dorchester County. (U. Md., Ent. Dept.). VIRGINIA - First and second instars infested 5-15 percent of alfalfa shoots in Botetourt County and 10 percent of shoots in Bedford County. (Allen). TENNESSEE - Larvae ranged 20-25 per square foot in alfalfa in Blount and Knox Counties. (Quillin). MISSISSIPPI - Adults per 8 square feet and larvae per 40 stems in flamed and unflamed second-year Buffalo alfalfa stand, respectively, in Pontotoc County: Adults 4 and 2; larvae 13 and 57. (Dinkins). ARKANSAS - First larvae of season 8 per 100 sweeps in Miller County and 40-60 per 100 sweeps in Faulkner County. Adults absent in both counties. No alfalfa treated in past years in Faulkner County; economic infestations expected in 1968. (Boyer). ILLINOIS - Eggs averaged 23 per square foot during survey of 17 alfalfa fields in 7 southern counties. (Ill. Ins. Rpt.). WYOMING - No adult activity in 15 alfalfa fields of Platte, Goshen, and Laramie Counties. (Parshall). OREGON - Infested 2 fields near Corvallis, Linn County, and one field 5 miles northeast of this area in Benton County. (Larson).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Averaged 60 per 100 sweeps in most Maricopa and Pinal County alfalfa. Damaged all terminals in some fields at Yuma, Yuma County; treatments applied. (Ariz. Coop. Sur.). CALIFORNIA - Probably this species heavy on alfalfa at Holtville, Imperial County. Bathyplectes curculionis (an ichneumon wasp) also heavy in area. B. curculionis adapting to H. brunneipennis in southern part of State. (Cal. Coop. Rpt.).

CLOVER LEAF WEEVIL (Hypera punctata) - OKLAHOMA - Larvae ranged 10-20 per sweep in isolated alfalfa fields in Kiowa County. (Okla. Coop. Sur.).

GREEN CLOVERWORM (Plathypena scabra) - ARKANSAS - First larvae of season on alfalfa and vetch in southwest, southeast, and central areas. (Boyer).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Larvae light, 10 per 100 sweeps, in many alfalfa fields in Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

A LEAF MINER FLY (Liriomyza pictella) - CALIFORNIA - Heavy on alfalfa at Holtville, Imperial County. (Cal. Coop. Rpt.).

MISCELLANEOUS FIELD CROPS

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Moderate on young vegetative safflower buds in field near Mesa, Maricopa County. (Ariz. Coop. Sur.).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - CALIFORNIA - Medium on 40-acre flax field at Winterhaven, Imperial County. (Cal. Coop. Rpt.).

POTATOES, TOMATOES, PEPPERS

POTATO APHID (Macrosiphum euphorbiae) - NEW JERSEY - Egg survey conducted on swamp rose in Cumberland, Salem, Gloucester, Burlington, Mercer, Monmouth, and Middlesex Counties. Eggs averaged 52.8 per site compared with 41.4 in 1967; percent viable eggs 79.4 compared with 61.1 in 1967. This aphid was troublesome in early 1967, especially on eggplant and tomato. Egg numbers indicate more of a problem in 1968. (Ins.-Dis. Newsltr.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Averaged 1 adult per leaf on potatoes in Salt River Valley, Maricopa County; light on tomatoes at Yuma, Yuma County. (Ariz. Coop. Sur.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - This species and Trichoplusia ni being controlled on 500 acres of tomatoes at Yuma, Yuma County. (Ariz. Coop. Sur.).

COLE CROPS

CABBAGE APHID (Brevicoryne brassicae) - ALABAMA - Very heavy on older collards in Escambia County; very light on commercial cabbage in Mobile and Baldwin Counties. (McQueen).

CUCURBITS

MELON APHID (Aphis gossypii) - ARIZONA - Controls applied to young melons at Yuma, Yuma County. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

ASPARAGUS BEETLES (Crioceris spp.) - NEW JERSEY - Adult survey made in Cumberland, Salem, Gloucester, Atlantic, Camden, and Burlington Counties. Statewide average per 100 stalks: C. asparagi 5.6 compared with 2.3 in 1967 and C. duodecimpunctata 1.1 compared with 1.3 in 1967. Overwintering populations light; no threat in 1968. (Ins.-Dis. Newsltr.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Lettuce requiring treatments in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

THRIPS - NEW MEXICO - Increasing on onions; young thrips in most Dona Ana County fields. (N.M. Coop. Rpt.).

PAINTED LADY (Vanessa cardui) - NEW MEXICO - Migrating across State; present throughout southern area. (N.M. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

RED-BANDED LEAF ROLLER (*Argyrotaenia velutinana*) - INDIANA - Collected 22 males March 19 in 30 traps containing 600 virgin females in Vincennes area orchard; 42 males taken March 19-25. First collections of 1968. (Dolphin).

SHOT-HOLE BORER (*Scolytus rugulosus*) - WASHINGTON - More abundant than usual on stone fruits in Chelan County area; adults recovered from duff under trees March 1. (Anthon).

A WEEVIL (*Tachypterellus quadrigibbus magna*) - DELAWARE - Adult collected at Newark, New Castle County, August 10, 1965, by J. Linehan. Det. by R.E. Warner. This is a new State record. (Burbutis).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - INDIANA - First newly hatched nymph found March 18 in Vincennes area; many hatched and migrated to terminal buds by March 25. (Dolphin).

SAN JOSE SCALE (*Aspidiotus perniciosus*) - WASHINGTON - Less abundant on stone fruits than in previous years in Chelan County area. (Anthon, Mar. 22).

PEAR PSYLLA (*Psylla pyricola*) - WASHINGTON - Generally less abundant than in 1967. Dormant sprays completed over entire eastern area; controls effective. (Burts, Mar. 22). OREGON - Eggs hatched March 19 in Hood River County. (Zwick).

TWO-SPOTTED SPIDER MITE (*Tetranychus urticae*) - OREGON - Overwintering forms leaving hibernation and moving to buds March 19. (Peifer).

CITRUS

CITRUS THRIPS (*Scirtothrips citri*) - ARIZONA - Moderate in most groves without prebloom spray; heavy on many individual untreated trees in Salt River Valley, Maricopa County. Nurseries and young groves treated at Yuma, Yuma County. (Ariz. Coop. Sur.).

PURPLE SCALE (*Lepidosaphes beckii*) - ALABAMA - Light to heavy on underside of leaves of citrus plants in southern Baldwin and Mobile Counties. (Deakle et al.).

CITRUS RED MITE (*Panonychus citri*) - CALIFORNIA - Medium on lemon nursery stock at Sacramento, Sacramento County; northern populations more prevalent and severe. (Cal. Coop. Rpt.).

SMALL FRUITS

SPIDER MITES (*Tetranychus* spp.) - CALIFORNIA - *T. pacificus* medium on 20 acres of grapes at Easton, Fresno County. *T. urticae* medium on strawberry plantings at Glendora, Los Angeles County. Generally more severe in southern plantings. (Cal. Coop. Rpt.).

ORNAMENTALS

ARMORED SCALES - FLORIDA - *Howardia biclavis* adults infested 90 of 100 gardenias at nursery in Lake Worth, Palm Beach County. (Wyles, Long, Mar. 22). VIRGINIA - Gravid *Aspidiotus juglansregiae* females numerous on camellia at Virginia Beach March 21; no eggs present. Immatures of *Hemiberlesia lataniae* active on holly at Richmond March 24. (Weidhaas). MARYLAND - *Phenacaspis pinifoliae* heavy on mugho pine planting in Baltimore. (U. Md., Ent. Dept.).

SPRUCE APHID (Elatobium abietinum) - OREGON - Appeared in early February on ornamental spruce in Multnomah County; populations and injury increased rapidly in March. (Nicolaison).

AN APHID (Anuraphis helichrysi) - OREGON - Leaf damage begun on ornamental plums in Multnomah County. (Nicolaison).

A TORTRICID MOTH (Cacoecimorpha pronubana) - OREGON - Pupation underway in Multnomah County. (Collier).

PRIVET MITE (Brevipalpus obovatus) - ALABAMA - All stages of probably this species very heavy, several hundred per leaf, on many camellias and azaleas throughout Baldwin, Mobile, and Escambia Counties; many plants completely browned. (Coats et al.).

ERIOPHYID MITES - CALIFORNIA - Paraphytoptus chrysanthemi heavy on chrysanthemum plants at San Diego, San Diego County. (Cal. Coop. Rpt.). VIRGINIA - Nalepella tsugifoliae adults heavy and laying eggs on Canada hemlock in Richmond; no hatch. (Weidhaas, Mar. 24).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - Overwintering populations continue at high level in most outbreak areas in southeastern area. New outbreaks reported from GEORGIA, LOUISIANA, TENNESSEE, and SOUTH CAROLINA. Significant increase in losses expected during 1968. Severe outbreak detected in east-central Louisiana during mid-October; involves 400,000 acres in La Salle, Catahoula, Caldwell, and Grant Parishes. Activity relatively low over 4.5 million-acre outbreak area in eastern TEXAS. Outbreak developed in Cades Cove of Great Smoky Mountains National Park in Tennessee; first population buildup in area since 1958. (South. For. Pest Rptr., Feb.). ALABAMA - Infestation of larvae, pupae, and adults heavy but isolated on pines in Lee County; some trees killed. (Wade et al.). TENNESSEE - Overwintering populations heavy in stands of shortleaf pine in Morgan and Monroe Counties. (Quillin).

BARK BEETLES - CALIFORNIA - Pityophthorus carmeli medium generally on bull pines at Cotati, Sonoma County; adults present. (Cal. Coop. Rpt.). Conditions favorable for buildup of Ips spp. following ice damage to scattered pine stands in GEORGIA, NORTH CAROLINA, and SOUTH CAROLINA. (South. For. Pest Rptr., Feb.).

TENT CATERPILLARS (Malacosoma spp.) - ALABAMA - M. americanum larvae averaged 100+ per tent; tents ranged 1-5 per tree on 50+ percent of wild cherry statewide. (McQueen). ARKANSAS - M. americanum hatch underway in northwest area. (Warren). OREGON - M. pluviale hatch begun in Multnomah County. (Collier).

SPRING CANKERWORM (Paleacrita vernata) - WISCONSIN - Males and females unusually common beneath loose bark of elm near Mazomanie. No egg masses as of March 28. (Wis. Ins. Sur.).

OLETHREUTID MOTHS - VIRGINIA - Rhyacionia frustrana pupae on slash, loblolly, and Japanese pines in nurseries at Portsmouth and Virginia Beach. (Weidhaas, Mar. 22). SOUTH CAROLINA - Laspeyresia sp. larval infestation in longleaf pine cones on Brick Church Seed Production area decreased substantially from 1966 levels; percent total cones infested and seed loss also decreased. Populations in loblolly pine cones on seed orchard on Edgefield District of Sumter National Forest continue at 1966 low levels. (South. For. Pest Rptr., Feb.).

A CECIDOMYIID MIDGE (Thecodiplosis piniradiatae) - CALIFORNIA - Larvae heavy on Monterey pines at Hillsborough, San Mateo County. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - Total of 4 cases reported in U.S. March 24-30 as follows: TEXAS - Starr 1, Hidalgo 1. CALIFORNIA - Imperial 2. Total of 62 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Territorio sur de Baja California 1, Sonora 51, Chihuahua 2, Coahuila 2, Tamaulipas 6. Total of 6 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 568,000; Mexico 124,680,000. (Anim. Health Div.).

HORN FLY (*Haematobia irritans*) - ARIZONA - Unusually heavy and troublesome in most feedlots and dairies in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.). OKLAHOMA - Ranged 25-200 per head on mature beef cattle in Logan County. (Okla. Coop. Sur.). MISSISSIPPI - Averaged 2-3 per animal on 3 penned Hereford bulls. None found on 2 bulls in adjacent pens. (Dinkins).

CATTLE LICE - ILLINOIS - Absent on 22 dairy herds (about 200 animals) February 24 to March 15. Light March 22 on 5 of 9 (60 percent) beef cattle herds; 9 of 74 animals infested. *Haematopinus eurysternus* dominant; occasional *Bovicola bovis* found. Serious on beef herds in other areas; some spraying conducted. (Moore). IOWA - *H. eurysternus* light on 2 of 32 hides from locker plant at Adair, Adair County. Occasional *B. bovis* specimen on these 32 hides. Animals were processed from about February 26 to March 25, 1968. (Iowa Ins. Rpt.).

A SCYTODID SPIDER (*Loxosceles unicolor*) - CALIFORNIA - Several females collected February 6 in Copper Basin Creek area of Whipple Mountains, San Bernardino County, by M.B. Madon and R.C. Prochaska. Det. by F. Ennik. This is first established record of this species west of Colorado River in State. (Cal. Coop. Rpt.).

A SCORPION (*Centruroides sculpturatus*) - CALIFORNIA - Total of 6 specimens collected February 6 in Copper Basin Creek area of Whipple Mountains, San Bernardino County, by M. B. Madon and R. C. Prochaska. Det. by F. Ennik. As far as can be determined, this is first established record of this species west of Colorado River in State. (Cal. Coop. Rpt.).

HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (*Reticulitermes* spp.) - ALABAMA - Several *R. flavipes* swarms, several thousand per swarm, emerged from building foundations in Auburn, Lee County. (McQueen). VIRGINIA - *Reticulitermes* spp. swarms in Culpeper County March 14, Chesterfield County March 19, and Montgomery County March 28. (Heltzel et al.).

BENEFICIAL INSECTS

LADY BEETLES - ALABAMA - *Adalia bipunctata* and *Cycloneda sanguinea* adults migrated to heavy *Aphis spiraecola* infested spirea plantings in Auburn and other central areas; egg laying completed, larval feeding heavy. (McQueen). *Olla abdominalis* adults leaving hibernation and feeding throughout most of State. Heavy on clovers in pecan orchards in Mobile, Baldwin, and Escambia Counites. (Deakle et al.). ARKANSAS - First *Hippodamia convergens* adults of season ranged 40-50 in 100 sweeps on Faulkner County vetch. (Boyer).

A FLOWER BUG (*Orius insidiosus*) - ARKANSAS - First adults of season very light, 5-10 per 100 sweeps, on alfalfa in State. (Boyer).

HYMENOPTEROUS PARASITES - ARKANSAS - Increasing on all types of green vegetation. (Boyer).

PHYTOSEIID MITES - WASHINGTON - Zetzellia sp. and Typhlodromus sp. active on prunes since early February in Yakima County area. (Anthon, Mar. 22).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CARIBBEAN FRUIT FLY (Anastrepha suspensa) - FLORIDA - Total of 3 larvae and 1 pupa taken from fruit of orange jessamine (Murraya paniculata) at Miami, Dade County, March 16. (Runfeldt). A. suspensa larvae taken from grapefruit and Anastrepha sp. adult observed ovipositing in Valencia and pineapple oranges March 25 at White City, St. Lucie County. (Campbell).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Total of 17 trees infested in Linares and Allende out of 32,095 trees inspected in 9 municipios of Nuevo Leon and Tamaulipas; 674 trees in 3 municipios in Baja California negative. Three trees on 2 adjacent properties infested out of 4,807 trees inspected on 734 properties in Hermosillo, Sonora. Light to moderate on 517 trees in Hidalgo, Guemez, and Padilla, Tamaulipas. Total of 2,702 trees on 40 properties given first treatment and 2,204 trees on 5 properties given second application at Linares, Nuevo Leon. (PPC Mex. Reg., Feb. Rpt.).

GRASSHOPPERS - WYOMING - Fifth instars of Psoloessa delicatula and Eritettix simplex active in rangeland areas of Goshen and Laramie Counties. (Parshall). ARIZONA - Trimerotropis spp. migrating from desert areas into citrus groves and into Yuma, Yuma County. (Ariz. Coop. Sur.).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Adults emerging and being caught in screen cages at experiment station at Mesa, Maricopa County. (Ariz. Coop. Sur.).

Weather of the Week continued from page 252.

winds and hail occurred at Bedford, Iowa. Other hailstorms occurred in Minnesota and Illinois. By Saturday night violent weather extended from Minnesota to Texas. Precipitation totals ranged from 0.50 inch to 1.50 inches from Arkansas to western New York. East of the Appalachians, totals ranged mostly from light sprinkles to near 0.25 inch. A comparison of the rainfall records for the past 8 months with those of earlier seasons shows that some areas in South Dakota and Nebraska have received less precipitation since the fall of 1967 than in any similar period in the 20th century.

TEMPERATURE: Subfreezing temperatures occurred early Monday morning, March 25, over the eastern fourth of the United States as far south as the Gulf of Mexico, with Tallahassee, Florida, registering 28°. Rapid warming during the week brought maximums to the 70's and 80's from the Great Plains to the Atlantic. Sioux City, Iowa, registered 91° on Saturday, setting a new high temperature record for the month of March at that location. The weekend cold front lowered the temperatures over most of the Great Plains. Sunday afternoon temperatures ranged from the 40's over the Dakotas to the 50's and 60's over Kansas and Missouri. Temperatures from the Dakotas to Arizona and eastward to western New York and Mississippi averaged 10° to 23° warmer than last week and much of that area was 9° to 18° above normal. Florida, a narrow strip along the gulf coast from Galveston, Texas, eastward, and northern and western Washington were the only areas with below normal temperatures last week. (Summary supplied by Environmental Data Service, ESSA.)

HAWAII INSECT REPORT

New State Record - Total of 11 adults of a STINK BUG (Plautia stali*) taken at light within past several weeks in Manoa area of Honolulu, Oahu. Two adults collected in light trap at Animal Quarantine Station in Honolulu. This species recorded from Japan, Formosa, and South China and is known to feed on mulberry, beans, and other plants. Det. by R. C. Froeschner. (Mitchell, Higa).

Turf, Pasture - Adults of a GRASS WEBWORM (Herpetogramma licarsisalis) very evident on vegetation along roadsides with larval damage light on Hilo, Bermuda, and Para grasses in some pastures at Kapahi, Kauai. Adults medium on grasses at Kapaa; light on grasses and buildings from lower Kokee to Wailua. (Sugawa, Greenwell).

Vegetables - CARMINE SPIDER MITE (Tetranychus telarius) light in watermelon fields at Makaha and Waianae, Oahu; light to medium on eggplant in Waimanalo, Pearl City, and Waianae. (Greenwell, Funasaki). IMPORTED CABBAGEWORM (Pieris rapae) eggs and adults heavy on cabbage and cauliflower in upper Omaopio, Maui, at 2,400 feet elevation. Eggs ranged 30-40 per plant in well sprayed one-acre cabbage field and 80-150 per plant in abandoned one-acre cauliflower field. (Ah Sam).

Forest and Shade Trees - Larval galleries of a CERAMBYCID BEETLE (Phoracantha semipunctata) found under bark of felled eucalyptus tree near Puuka-pele, lower Kokee, Kauai, February 21. Although adults not found, larvae compare favorably with those of this species. Reported for first time in State in 1965 infesting eucalyptus in Manoa and Honouliuli, Oahu. (Davis). All stages of CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) increased markedly on terminal leaves of banyan trees in many parts of Oahu. Adults of a predacious anthocorid bug (Montandoniola moraguesi) ranged 1-3 per leaf and nymphs 1-5 per leaf on most heavily G. ficorum infested leaves. (Funasaki).

General Pests - Young nymphs of SOUTHERN GREEN STINK BUG (Nezara viridula) heavy on spiny amaranth and other weeds in 0.5 acre area at Kihei, Maui. Nymphs and adults very light on weeds at Kawela, Molokai, and light to medium on castorbean, indigo, asystasia, and other weeds in various areas of Oahu. (Miyahira, Nakao).

Beneficial Insects - Adults of a TEPHRITID FLY (Tetraeuaresta obscuriventris) medium on flowers of elephants-foot (Elephantopus mollis) and resting on various other plants at Kapahi and Lawai Valley, Kauai. (Sugawa, Shinbara). A MINUTE EGG PARASITE, tentatively determined as Trichogramma semifumatum, reared from several eggs of croton caterpillar (Achaea janata) collected from Maui and Molokai. These are new island records. This egg parasite also parasitizing numerous eggs of a grass webworm (Herpetogramma licarsisalis) on Oahu. (Davis).

Miscellaneous Pests - VAGRANT GRASSHOPPER (Schistocerca vaga) adults and newly hatched nymphs numerous on various grasses and weeds in farm areas in Waianae, Oahu; nymphs up to 8 per sweep in some areas. (Funasaki).

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* This is a new Western Hemisphere record but is not known to occur in continental United States. (PPC).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville - 3/25-28, BL - Armyworm (*Pseudaletia unipuncta*) 5, black cutworm (*Agrotis ipsilon*) 2, cabbage looper (*Trichoplusia ni*) 4, granulate cutworm (*Feltia subterranea*) 42, salt-marsh caterpillar (*Estigmene acrea*) 2, tobacco budworm (*Heliothis virescens*) 1, variegated cutworm (*Peridroma saucia*) 1. Sanford - 3/19-23, BL - Armyworm 6, black cutworm 5, cabbage looper 14, salt-marsh caterpillar 67. MISSISSIPPI - Stoneville - 3/1-29, 2 BL, 26-80°F, precip. 4.1 - Armyworm 81, black cutworm 28, corn earworm (*Heliothis zea*) 1, variegated cutworm 90, yellow-striped armyworm (*Prodenia ornithogalli*) 5. TEXAS - Brownsville - 3/23-29, 2 BL, 42-82°F, precip. trace - Armyworm 183, black cutworm 123, cabbage looper 11, granulate cutworm 11, salt-marsh caterpillar 48, tomato hornworm (*Manduca quinquemaculata*) 5, variegated cutworm 46, yellow-striped armyworm 4. Waco - 3/23-29, BL - Armyworm 350, beet armyworm (*Spodoptera exigua*) 2, corn earworm 1, granulate cutworm 2, salt-marsh caterpillar 1, variegated cutworm 51.

CORRECTIONS

CEIR 18(7):78 - FOREST AND SHADE TREES - ARMORED SCALES - CALIFORNIA - Cryptaspidiotus shastae should read *Aonidia* shastae.

CEIR 18(8):121 - Paragraph 3, line 11 - ...a SATURNIID MOTH (Hemileuca eglanterina)... should read (*Pseudohazis* eglanterina).

CEIR 18(13):231 - CURRENT CONDITIONS - Delete "LYGUS BUGS unusually heavy on cotton and safflower in Arizona."

CEIR 18(13):242 - CORRECTIONS - Eutombicula spp. should read Eut*r*ombicula spp.

INSECT DETECTION

New State Records

A CRANE FLY (*Limnophila laricicola*) - MARYLAND - Reared from pond in Pocomoke Cypress Swamp in Worcester County, July 22, 1966, by S. R. Joseph. Det. by A. Stone.

A WEEVIL (*Tachypterellus quadrigibbus magna*) - DELAWARE - Adult collected at Newark, New Castle County, August 10, 1965, by J. Linehan. Det. by R. E. Warner. (p. 257).

A STINK BUG (*Plautia stali*) - HAWAII - Adults taken at light in Manoa area and at Animal Quarantine Station in Honolulu, Oahu. Det. by R. C. Froeschner. This is also a new Western Hemisphere record. (p. 261).

New County and Island Records

RHODES-GRASS SCALE (*Antonina graminis*) - CALIFORNIA - Kern County. (p. 254).

A MINUTE EGG PARASITE (*Trichogramma semifumatum*) - HAWAII - Maui and Molokai Islands. (p. 261).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1967

(continued from page 250)

FOREST INSECTS[1]

Situation in the Western States

BARK BEETLE infestations were dominant among the many insect problems affecting the forest resources in the Western United States. Longstanding infestations of MOUNTAIN PINE BEETLE (*Dendroctonus ponderosae*) were still widespread in lodgepole pine on the Targhee National Forest, IDAHO, and on the Bridger and Teton National Forests, WYOMING. Notable decreases in beetle populations were observed in some areas and it is expected there will be an overall reduction in tree killing in 1968.

MOUNTAIN PINE BEETLE was a problem in other areas of the West. For example, sugar pine mortality increased along the Feather River in CALIFORNIA and 25,000 ponderosa pines were killed in MONTANA and IDAHO. This species, also known as the BLACK HILLS BEETLE in the Central Rocky Mountain section, destroyed ponderosa pine stands on the San Juan, Roosevelt, and Black Hills National Forests, and attacked lodgepole pine trees on the Shoshone, Arapaho, and White River National Forests.

Other troublesome bark beetles included the ENGELMANN SPRUCE BEETLE (*Dendroctonus obesus*) which persisted in logging debris in the Southwestern States and COLORADO and WYOMING; the DOUGLAS-FIR BEETLE (*D. pseudotsugae*) in northern WASHINGTON and southern IDAHO, and the WESTERN PINE BEETLE (*D. brevicomis*) in CALIFORNIA.

Across the Western States, insect pests other than bark beetles also presented problems but were less important economically.

The situation in ALASKA was one of concern over increasing insect activity. The SITKA-SPRUCE BEETLE (*Dendroctonus obesus*) continued to spread in the Kenai Peninsula and control work is now planned to protect these areas of high recreational and scenic values. Extensive areas of aspen in the interior from Anchorage to Fairbanks and eastward were defoliated by the LARGE ASPEN TORTRIX (*Choristoneura conflictana*). HEMLOCK SAWFLY (*Neodiprion tsugae*) was active over much of southeast Alaska.

Forest insect damage in OREGON and WASHINGTON was the worst in nearly 10 years. Defoliators were the principal pests with the LARCH CASEBEARER (*Coleophora laricella*) causing the most destruction as infestations continued to spread. LARCH BUD MOTH (*Zeiraphera griseana*) was damaging on 140,000 acres in northern Washington, and a NEEDLE MINER (*Coleotechnites* sp. near *milleri*), though less numerous than in 1966, caused extensive defoliation in lodgepole and ponderosa pine stands in central Oregon and Washington. The DOUGLAS-FIR BEETLE also reached outbreak status in Washington.

The overall forest insect situation improved in CALIFORNIA when the DOUGLAS-FIR BEETLE epidemic in north coastal Douglas-fir was brought under control. Lack of rainfall, however, again resulted in increased activity of MOUNTAIN PINE BEETLE and WESTERN PINE BEETLE in ponderosa and sugar pine in the northern part of the State.

In the northern Rocky Mountains BARK BEETLE activity increased while DEFOLIATOR infestations decreased in some areas. MOUNTAIN PINE BEETLE populations reached outbreak conditions in lodgepole and ponderosa pine stands in MONTANA and continued to be a problem in western white pine stands on the Kaniksu, Coeur d'Alene, St. Joe, and Clearwater National Forests in IDAHO. A hot dry summer contributed to a buildup of ENGRAVER BEETLES in slash in western Montana. Natural factors reduced the LARCH SAWFLY (Pristiphora erichsonii) populations; and the LARCH BUD MOTH infestation in Montana decreased in area from 518,000 acres in 1966 to 110,000 acres in 1967. Incidence of SPRUCE BUDWORM (Choristoneura fumiferana) decreased east of the Continental Divide; the center of infestation moved west and north.

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[1] This summary is the introduction of highlights section of the "Forest Insect Conditions in the United States - 1967" which was compiled and published by the Forest Service, U. S. Department of Agriculture. Copies of the complete annual summary are available upon request from the Regional Forester or Area Director in your area. Addresses of the regional offices may be found on page 266 in this issue of the CEIR.

In the central Rocky Mountain States the most troublesome insect was the BLACK HILLS BEETLE. Scattered infestations occurred in ponderosa pine forests on the San Juan and Roosevelt National Forests, COLORADO, and the Black Hills National Forest, SOUTH DAKOTA, and in lodgepole pine stands on the Shoshone National Forest, WYOMING, and the Arapaho and White River National Forests, Colorado. The first large PINE ENGRAVER (Ips pini) outbreak in the region appeared near Halsey, NEBRASKA. However, the epidemic was quickly reduced to tolerable levels. There was a slight increase in area of SPRUCE BUDWORM defoliation but no top killing was evident.

With one major exception, forest insect problems in the Intermountain Region were comparatively unimposing. That exception was the MOUNTAIN PINE BEETLE epidemic which continued to deplete stands of lodgepole pine in southern IDAHO, western WYOMING, and northern UTAH. The huge outbreak in the Teton Wilderness of western Wyoming which showed signs of lessening in 1966, declined even further in 1967. On the Targhee National Forest in eastern Idaho, tree killing continued at an alarming rate. Woodpeckers and other natural enemies of the beetles helped lessen their impact on the Bridger National Forest. Areas which had a history of heavy defoliation from SPRUCE BUDWORM experienced only light damage on relatively small areas. Infestations from other pests such as DOUGLAS-FIR BEETLE, ENGRAVER BEETLES (Ips. spp.), DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata), and SUGAR PINE TORTRIX (Choristoneura lambertiana) all showed evidence of declining destructive capacity.

In the Southwest, ENGELMANN SPRUCE BEETLE increased sharply as a result of an abundance of host material blown down in wind storms in 1966. DOUGLAS-FIR TUSSOCK MOTH appeared in two new areas in southeastern NEW MEXICO. Defoliation from SPRUCE BUDWORM was less than it was last year. A new outbreak of ROUND-HEADED PINE BEETLE (Dendroctonus adjunctus) killed young ponderosa pine in New Mexico, and ARIZONA FIVE-SPINED IPS (Ips lecontei) destroyed ponderosa pine in ARIZONA. The SOUTHWESTERN PINE TIP MOTH (Rhyacionia neomexicana) infested 94,000 acres of natural ponderosa pine reproduction and 3,200 acres of plantation seedlings in north-central Arizona.

Situation in the Southern and Southeastern States

The principal insect pest in the South and Southeast was the SOUTHERN PINE BEETLE (Dendroctonus frontalis) which again developed to epidemic proportions from TEXAS through the Gulf States and up into VIRGINIA. A long period without rainfall in late summer encouraged an outbreak of ENGRAVER BEETLES (Ips spp.) in localized areas of the coastal States. The BLACK TURPENTINE BEETLE (D. terebrans) continued to infest stumps and residual trees in logging areas in LOUISIANA, MISSISSIPPI, and TEXAS. Meanwhile, the NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) continued to be a serious problem in seed orchards and nurseries and damage by most other defoliating insects continued at the 1966 level. Fortunately, a wet summer in NORTH CAROLINA and TENNESSEE was a deterrent to the spread of BALSAM WOOLLY APHID (Adelges piceae) in Fraser fir forests. Only one new area of infestation was found in North Carolina.

Situation in the Lake and Central States and the Northeast

In the Northeastern States, forest DEFOLIATORS continued to concern forest managers. For example, SPRUCE BUDWORM activity increased in northern MINNESOTA and in

MAINE. In the Oxbow, Maine, area where 100,000 acres of budworm infestation were sprayed by the Maine Forest Service in 1967, another 80,000 acres may require chemical control in 1968. Control measures may also be necessary against the JACK-PINE BUDWORM (*Choristoneura pinus*) which caused heavy defoliation in MICHIGAN, MINNESOTA, and WISCONSIN. A FALL CANKERWORM (*Alsophila pometaria*) and OAK LEAF TIER (*Croesia albicomana*) complex defoliated oaks in NEW JERSEY, NEW YORK, PENNSYLVANIA, and WEST VIRGINIA. A 1966 infestation of FOREST TENT CATERPILLAR (*Malacosoma disstria*) in the International Border area of northern MINNESOTA spread southeasterly, and the SADDLED PROMINENT (*Heterocampa guttivitta*) defoliated hardwoods in a section extending from the Lake States to New England. In New England, too, thousands of acres of birches were defoliated by the BIRCH SKELETONIZER (*Bucculatrix canadensisella*) and BIRCH LEAF MINER (*Fenusa pusilla*), and balsam fir was damaged by BALSAM WOOLLY APHID. SARATOGA SPITTLEBUG (*Aphrophora saratogensis*) persisted in red pine plantations in the Lake States. Other insect pests of less concern were a MAPLE SCALE (*Cryptococcus* sp.), GYPSY MOTH (*Porthetria dispar*), BROWN-TAIL MOTH (*Nygmia phaeorrhoea*), RED-HEADED PINE SAWFLY (*Neodiprion lecontei*), and WHITE-PINE WEEVIL (*Pissodes strobi*).

Suppression Activities

Public and private agencies cooperated to check damage and loss caused by forest insects. The major control efforts in the Nation were directed against bark beetles.

The largest suppression effort in the country was again aimed at control of mountain pine beetle in stands of lodgepole pine on the Targhee and Teton National Forests, Teton National Park, and on adjacent private lands in the Intermountain Region. A modified control program on the Targhee Forest will be continued in 1968. Beetle populations on the Teton Forest and Teton Park have been reduced to levels where further treatment will not be required. Throughout the West where this beetle is a problem, increased effort is being placed on logging of infested trees and on converting susceptible, overmature stands of lodgepole and ponderosa pine to a young and vigorous state. As this work progresses, less dependence will be placed on control by felling and burning, or treating with toxic oils.

On the Nebraska National Forest, a sudden outbreak of the pine engraver beetle was promptly quelled by the concerted efforts of public and private personnel in felling and chemically treating the infested trees.

In the South and Southeast logging of infested trees has been used where possible to control the southern pine beetle; however, during 1967, an upsurge in beetle populations necessitated the increased use of chemical control. Control of black turpentine beetle was mainly confined to the treatment of infested stumps in logging areas. On some low, wet sites it was necessary to treat residual trees.

The largest defoliator suppression effort in 1967 was directed against spruce budworm infesting high value spruce-fir stands in Maine. In this cooperative project, 100,000 acres of infested type were aerially treated with DDT. Some virulent budworm populations still exist in Maine and may require treatment in 1968.

The Forest Service continues to search for a substitute for DDT for use in controlling forest defoliators. A carbamate that shows promise for spruce budworm control was further tested in 1967 in several areas. In other suppression activities, high-value Fraser fir in North Carolina was sprayed to prevent infestations of balsam woolly aphid; pines in the Lake States were treated to control infestations of Saratoga spittlebug and red-headed pine sawfly; applications of *Bacillus thuringiensis* provided maintenance control of Nevada buck moth populations at White Sands National Monument, New Mexico, and of tent caterpillar populations at Zion National Park, Utah; cultural and trap tree methods were used in Alaska and the Southwest to control spruce beetle; and ornamental trees in the Portland, Oregon, area infested with European pine shoot moth were either fumigated or destroyed.

Pest suppression projects are summarized in the following tabulation:

Pest Control Accomplishments

Insect	Location	Trees treated	Acres sprayed
Southern pine beetle	South and Southeast	156,000	
Black turpentine beetle	South and Southeast	183,000 [1]	
Western pine beetle	California and Utah	6,500	
Black Hills beetle	South Dakota, Colorado, and Wyoming	62,500	
Mountain pine beetle	Utah, Idaho, Wyoming, and California	547,000	
Spruce budworm	Montana, Idaho, and Maine		125,000
Jack-pine budworm	Wisconsin		1,000
Balsam woolly aphid	Tennessee, North Carolina, and Arkansas	224,500	
Miscellaneous	Entire United States	51,000	1,500
Total		1,230,500	127,500

[1] Includes treating of stumps.

REGIONAL AND AREA OFFICE ADDRESSES

U. S. FOREST SERVICE

Region

1
U. S. Forest Service
Federal Building
Missoula, Montana 59801

2
U. S. Forest Service
Federal Center,
Building 85
Denver, Colorado 80225

3
U. S. Forest Service
Federal Building
517 Gold Avenue, S. W.
Albuquerque, New Mexico 87101

4
U. S. Forest Service
Federal Office Building
324 - 25th Street
Ogden, Utah 84401

5
U. S. Forest Service
630 Sansome Street
San Francisco, California 94111

Region

6
U. S. Forest Service
P. O. Box 3623
Portland, Oregon 97208

10
U. S. Forest Service
Federal Office Building
P. O. Box 1628
Juneau, Alaska 99801

Area

NA
Northeastern Area
U. S. Forest Service
6816 Market Street
Upper Darby, Pennsylvania 19082

SA
Southeastern Area
U. S. Forest Service
P. O. Box 2570
Asheville, North Carolina 28802

WEATHER OF THE YEAR 1967[1]

Highlights:

Outstanding weather events during 1967 included ample precipitation in nearly all areas for crop production and water supply; numerous severe winter storms; serious flooding in the Fairbanks, Alaska, area and, from Hurricane Beulah's heavy rains, in southern Texas and adjacent Mexico; and the second greatest number of tornadoes.

GENERAL: Heavy spring snowfall in most of the West left one of the best mountain snowpacks of recent years. Due to cool weather, the snowmelt began about a month later than usual and then took place at a rather steady rate so that no serious floods occurred. Deficient snowfall was mainly limited to the southern Rocky Mountain region, and in Arizona the deficiency was offset by heavy summer rainfall. Only in New Mexico did the water shortage of recent years continue. In the other Western States irrigation water supplies were good to excellent--even in the Pacific Northwest where the summer was unusually hot and dry.

East of the Rockies the weather was highlighted by a cool summer and autumn. Some southeastern sections reported the coolest summer on record. Precipitation was generally adequate for good crop production. Record harvests of wheat, soybeans, corn, sorghum grains, peanuts, and hay were reported. However, cotton production was the lowest since 1895, due primarily to cool, wet weather in the South.

WINTER-TYPE STORMS: Heavy snowstorms crossed the Great Plains and Great Lakes region January 8-9, 16, and 26. High winds during each storm drifted snow and seriously hampered or halted traffic, and local blizzard conditions developed during the first two storms. The storm of the 26th left a belt of snow up to 2 feet deep from northeastern Illinois across northern Indiana into central Lower Michigan. Winds up to 50 m.p.h. left 12- to 15-foot drifts. In Chicago this storm set snowfall records of 19.8 inches in 24 hours and 23.0 inches for a single storm. A monthly total of 35.3 inches also set a new record January snowfall total for Minneapolis, Minnesota, well above the former record of 28.8 inches in 1917.

A coastal storm dumped heavy snow (16 to 18 inches) from eastern Maryland to southern New England on February 7. Blizzard conditions occurred from New Jersey northward.

Three heavy snowstorms hit the Northeast in March--on the 6-7th, 15-16th, and 22d. These storms boosted March totals to record amounts at several stations in southern New England. Boston, Massachusetts, had 22.9 inches, a March record. At Hartford, Connecticut, 33.2 was the second greatest March total and boosted the seasonal total to 81.4 inches, the most in 62 years.

In North Dakota on April 16-17, a blizzard and ice storm with up to 12 inches of snowfall that drifted 8 feet high in places caused considerable damage.

The Dakotas were again hit by an ice storm and blizzard on April 30-May 1. This was one of the worst winter-type storms on record for so late in the season. Winds up to 70 m.p.h. and as much as 15 inches of snow, with 12-foot drifts, caused utility and other damage estimated at more than a half-million dollars. Severe electrical displays accompanied the storm in many areas. In South Dakota this storm became known as the May Day blizzard, and was the latest on record for the State.

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[1] Prepared by L. H. Seamon, Climatologist, Environmental Data Service, Environmental Science Service Administration, Washington, D. C.

Another winter-type storm, notable for so late in the year, was a "northeaster" which occurred in Massachusetts May 25-26. Winds reached hurricane force in gusts. High winds during this storm were of longer duration than during most hurricanes and caused devastation equal to that of the 1938 hurricane in some coastal areas. Some snow (1 to 3 inches in the Connecticut Valley) and thunder accompanied the storm. Keene, New Hampshire, reported 2.5 inches, the latest snowstorm there in 76 years and a new record May total. Heavy snow in some northern sections of New England broke tree limbs, and heavy rains and tides caused heavy losses along the coast. This storm caused losses estimated in the millions of dollars.

One of the heaviest falls in the Far West occurred at Squaw Valley, California, where 8 feet of snow fell in 60 hours during the third week of March. Mount Shasta, California, measured 50.2 inches during April, a record for any month since records began in 1888.

One of the most outstanding snowstorms of the year occurred in southern Texas and northern Mexico on January 9. Falls of 5 to 7 inches were the second heaviest on record in southern Texas from Catulla and Three Rivers south to Hebbronville. (Monterey, Mexico, reported a record fall of 20 inches for that station and even heavier amounts were reported from nearby localities.)

On November 30, 7 to 12 inches of snow fell in the Washington, D. C. area and 8.4 inches, a November record, at Baltimore, Maryland. A 37-inch fall at Boonville, New York, brought the November total to 84 inches, the greatest snowfall there for any month in the past 19 years. Other stations in New York measured 15 to over 30 inches.

A series of storms brought heavy snowfall to many sections of the Far West during the second and third weeks of December. Near-record amounts of 3 to 7 feet fell in northern and central Arizona, southern Utah, and northwestern New Mexico, accompanied by very cold, windy weather. Indian reservations were hard hit. The heavy snow and drifts closed roads and hundreds of persons were stranded. Helicopters were used to drop feed to livestock and supplies to isolated homes.

GLAZE: A severe ice storm occurred on January 26-27. It extended across northern Illinois in a 50-mile wide area and on across Indiana from about Lafayette to Fort Wayne, and on through northwestern Ohio and the southeast corner of Michigan. Losses totaled several million dollars. Ice up to an inch thick was reported in Indiana.

Another ice storm occurred in Minnesota on January 24. Hardest hit was the Minneapolis and St. Paul area, where electricity was cut off from 10,000 homes.

TORNADOES: Over 800 tornadoes were reported during the year, the third greatest number of record. They caused at least 107 deaths. Tornadoes occurred in record numbers in January. In Missouri, Iowa, and Illinois, on the 24th, an outbreak of tornadoes killed 7 persons, injured 267, and caused millions of dollars property damage--$15 million in the St. Louis, Missouri, area. This was the second major tornado disaster in the St. Louis area in the past 8 years.

Another outbreak of these storms on April 21 left paths of destruction in Iowa, Illinois, Wisconsin, Indiana, and Michigan. At least 60 persons were killed and over 1,000 injured in northeastern Illinois--mostly in the Belvidere and Chicago areas--and property losses totaled many millions.

Nine tornadoes occurred in southeastern Minnesota on April 30. Thirteen persons were killed, 65 injured, and property losses estimated well above $9 million.

On May 6 a tornado killed 1 person, injured 25, and was blamed for property losses estimated at $500 thousand to $5 million in Jefferson County, Alabama. Greatest destruction occurred in the west end of Birmingham.

HURRICANES: Great Hurricane Beulah moved inland east of Brownsville, Texas, near the mouth of the Rio Grande on September 20. A maximum wind of 136 m.p.h. was reported at Brownsville. More damaging than wind or tides was the record flooding produced by torrential rains. Rio Grande City, Edoy, Falfurrias, and Skidmore all reported 30 inches or more. Beulah spawned a record number of 47 tornadoes. Fifteen persons died in Texas: 5 from tornadoes; 10 from flooding. Damage was estimated at $200 million.

Hurricane Doria passed close off the Maryland coast on September 16 and made landfall near the Virginia-North Carolina border late on that day as a tropical storm. Winds along the coast gusted from 55 to 60 m.p.h., and tides ran 2 to 3 feet above normal. Three lives were lost in a boating accident. Only minor damage was reported.

FLOODS: There were four noteworthy floods during the year. Severe flooding occurred in March in the upper Ohio Basin. Nearly all streams in West Virginia left their banks with several reaching record to near-record heights. That State was declared a disaster area; 3,800 families received Red Cross assistance. The flooding caused many millions of dollars damage. Damage on the main stem of the Ohio was tentatively put at $25 million.

The heaviest flooding since early in the 1950's occurred in the lower Missouri Basin in June. Some tributaries in Nebraska and Kansas reached near-record heights. Preliminary estimates put damage at $50 million in Nebraska and at about $30 million in Kansas and Missouri. Two lives were lost.

Disastrous flooding hit Fairbanks, Alaska, and the nearby town of Nenana in August. Fairbanks was almost completely inundated. Ten to eleven thousand persons were cared for in Red Cross shelters. Preliminary estimates of damage ranged from $150 to $200 million.

Severe and extensive flooding followed in the wake of Hurricane Beulah in south Texas during September. All streams from the Guadalupe to the Rio Grande were in flood. Over one million persons were immobilized by the high water. Damage was in the tens of millions of dollars.

TEMPERATURE: The outstanding temperature highlight of 1967 in the conterminous United States was the persistence of above normal temperatures in the Far West and below normal temperatures in central and eastern areas from July through November and to a somewhat lesser extent in June.

This was one of the coolest summers on record in central and southeastern areas. It was the coolest summer in 95 years at Athens, Georgia, and since 1885 at Concordia, Kansas. In southeastern areas autumn also was among the coolest autumns on record. The cool weather in the Southeast was unfavorable for the cotton crop. In September frost, extending as far south as northeastern Arizona on the 14th, Concordia, Kansas, on the 28th, and in the vicinity of Columbus, Georgia, on the 30th, was three weeks early in some locations. No serious damage was reported, however.

In some sections of the Far West August and September were among the warmest on record. While few record temperatures occurred, the number of days with temperatures of 90° or above and with 100° or above set new records in many locations.

January was relatively mild even though an intense cold spell about midmonth east of the Rockies brought subzero minima as far south as northern Kansas, central Illinois and Indiana. Extreme lows of-48° were reported in Montana and Minnesota.

February was cold in the East and unusually warm in the West. In northern areas east of the Rockies a number of stations reported lows of -40° or lower during cold spells the first week and again about midmonth. In the Pacific Northwest this was one of the warmest Februarys.

Spring temperatures averaged above normal in central and southern areas east of the Rockies, and below normal elsewhere even though May was cold nearly everywhere. During the third week of March freezing extended far southward, and damaged the peach and apple crops in Georgia and the Carolinas. Portions of the Far West reported the coldest April on record. At San Diego, California, the weather was much like the average weather for February. Fruit losses from the freeze were reported in western Colorado where Grand Junction reported 24° on the 21st. Many stations from eastern Texas to the Atlantic had their warmest April.

May was the coldest on record at many northeastern stations and the coldest since 1917 at many others. It was the coldest May during a record dating back to 1820 at Albany, New York.

After six months of temperatures above normal in the West and below in the East, this pattern was reversed in December. It was the coldest December in many years in the southern Rocky Mountain region.

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